



Fact Sheet

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Proposed Reissuance of a National Pollutant Discharge Elimination System (NPDES) Permit to Discharge Pollutants Pursuant to the Provisions of the Clean Water Act (CWA)

**Department of Interior
Bureau of Reclamation
Wastewater Treatment Plant at Grand Coulee Dam
P.O. Box 620
Coulee Dam, Washington 99133**

EPA Proposes To Reissue NPDES Permit

EPA proposes to Reissue the NPDES permit for the facility referenced above. The draft permit places conditions on the discharge of pollutants from the wastewater treatment plant to waters of the United States. In order to ensure protection of water quality and human health, the permit places limits on the types and amounts of pollutants that can be discharged from the facility.

This Fact Sheet includes:

- information on public comment, public hearing, and appeal procedures
- a listing of proposed effluent limitations and other conditions for the facility
- a map and description of the discharge location
- technical material supporting the conditions in the permit

401 Certification

The state in which the discharge originates is typically responsible for issuing the certification pursuant to CWA Section 401(a)(1). In the case where the state has no authority to give 401 certification, such as for a discharge located within the boundaries of an Indian Reservation, EPA provides the certification. The point of discharge of the outfall is also located within boundaries of the Confederated Tribes of the Reservation (also referred to as Colville Tribes or CCT). Indian Tribes may issue 401 certification for discharges within their boundaries if the Tribe has been approved by the EPA pursuant to CWA Section 518(e) and 40 CFR Section 131.8 to administer a water quality standards program. The Colville Tribes has not yet been authorized to provide 401 certification. Therefore, EPA is responsible for issuing 401 certification in this case.

However, in the course of issuing this NPDES Permit, EPA has consulted with the Colville Tribes.

Public Comment

Persons wishing to comment on, or request a Public Hearing for the draft permit for this facility may do so in writing by the expiration date of the Public Comment period. A request for a Public Hearing must state the nature of the issues to be raised as well as the requester's name, address and telephone number. All comments and requests for Public Hearings must be in writing and should be submitted to EPA as described in the Public Comments Section of the attached Public Notice.

After the Public Notice expires, and all comments have been considered, EPA's regional Director for the Office of Water and Watersheds will make a final decision regarding permit issuance. If no substantive comments are received, the tentative conditions in the draft permit will become final, and the permit will become effective upon issuance. If substantive comments are received, EPA will address the comments and issue the permit. The permit will become effective no less than 30 days after the issuance date, unless an appeal is submitted to the Environmental Appeals Board within 30 days.

Documents are Available for Review

The draft NPDES permit and related documents can be reviewed or obtained by visiting or contacting EPA's Regional Office in Seattle between 8:30 a.m. and 4:00 p.m., Monday through Friday at the address below. The draft permits, fact sheet, and other information can also be found by visiting the Region 10 NPDES website at "<http://epa.gov/r10earth/waterpermits.htm>."

United States Environmental Protection Agency
Region 10
1200 Sixth Avenue, OWW-130
Seattle, Washington 98101
Phone: (206) 553-0060 or
Toll Free 1-800-424-4372 (within Alaska, Idaho, Oregon and Washington)

The fact sheet and draft permit are also available at:

Inchelium Community Center
Center Loop No. 9
P.O. Box 202
Inchelium, WA 99138
Phone: (509) 722-7031; Fax: (509) 722-7034

Keller Community Center
11669 S. Highway 21
P.O. Box 278
Keller, WA 99140
Phone: (509) 634-2190; Fax: (509) 634-2401

CCT Office of Environmental Trust
13 Methow Street, Colville Indian Agency
P.O. Box 150
Nespelem, WA 99155
Phone: (509) 634-2428; Fax: (509) 634-2427

Nespelem Resource Center (Library)
Arrow Lakes Avenue, Colville Indian Agency
P.O. Box 150
Nespelem, WA 99155
Phone: (509) 634-2791; Fax: (509) 634-2790

Nespelem Community Center
Omak Lake Road (River Road)
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Phone: (509) 634-2370; Fax: (509) 634-2375

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Acronyms

1Q10	1 day, 10 year low flow
7Q10	7 day, 10 year low flow
30B3	Biologically-based design flow intended to ensure an excursion frequency of less than once every three years, for a 30-day average flow.
ACR	Acute-to-Chronic Ratio
AML	Average Monthly Limit
ASR	Alternative State Requirement
AWL	Average Weekly Limit
BA	Biological Assessment
BAT	Best Available Technology economically achievable
BCT	Best Conventional pollutant control Technology
BE	Biological Evaluation
BO or BiOp	Biological Opinion
BOD ₅	Biochemical oxygen demand, five-day
BOD _u	Biochemical oxygen demand, ultimate
BMP	Best Management Practices
BPT	Best Practicable
C	Degrees Celsius
CCT	“Confederated Tribes of the Colville Reservation” or “Colville Tribes”
CBOD	Carbonaceous Biochemical Oxygen Demand
CFR	Code of Federal Regulations
CFS	Cubic Feet per Second
COD	Chemical Oxygen Demand
CSO	Combined Sewer Overflow
CV	Coefficient of Variation
CWA	Clean Water Act
DMR	Discharge Monitoring Report
DO	Dissolved oxygen
EA	Environmental Assessment
EFH	Essential Fish Habitat

EIS	Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
FDF	Fundamentally Different Factor
FR	Federal Register
Gpd	Gallons per day
HUC	Hydrologic Unit Code
IC	Inhibition Concentration
I/I	Infiltration and Inflow
LA	Load Allocation
lbs/day	Pounds per day
LC	Lethal Concentration
LC ₅₀	Concentration at which 50% of test organisms die in a specified time period
LD ₅₀	Dose at which 50% of test organisms die in a specified time period
LOEC	Lowest Observed Effect Concentration
LTA	Long Term Average
LTCP	Long Term Control Plan
mg/l	Milligrams per liter
ml	Milliliters
ML	Minimum Level
Ug/l	Micrograms per liter
Mgd	Million gallons per day
MDL	Maximum Daily Limit or Method Detection Limit
MF	Membrane Filtration
MPN	Most Probable Number
N	Nitrogen
NEPA	National Environmental Policy Act
NOAA	National Oceanic and Atmospheric Administration
NOEC	No Observable Effect Concentration
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NSPS	New Source Performance Standards

OWW	Office of Water and Watersheds
O&M	Operations and maintenance
PCS	Permit Compliance System
POTW	Publicly owned treatment works
PSES	Pretreatment Standards for Existing Sources
PSNS	Pretreatment Standards for New Sources
QAP	Quality assurance plan
RP	Reasonable Potential
RPM	Reasonable Potential Multiplier
RWC	Receiving Water Concentration
SIC	Standard Industrial Classification
SPCC	Spill Prevention and Control and Countermeasure
SS	Suspended Solids
SSO	Sanitary Sewer Overflow
s.u.	Standard Units
TMDL	Total Maximum Daily Load
TOC	Total Organic Carbon
TRC	Total Residual Chlorine
TRE	Toxicity Reduction Evaluation
TSD	Technical Support Document for Water Quality-based Toxics Control (EPA/505/2-90-001)
TSS	Total suspended solids
TU _a	Toxic Units, Acute
TU _c	Toxic Units, Chronic
USFWS	U.S. Fish and Wildlife Service
USGS	United States Geological Survey
UV	Ultraviolet
WET	Whole Effluent Toxicity
WLA	Wasteload allocation
WQBEL	Water quality-based effluent limit
WQS	Water Quality Standards
WWTP	Wastewater treatment plant

I. Applicant

A. General Information

This fact sheet provides information on the draft NPDES permit for the following entity:

Department of Interior, Bureau of Reclamation
Grand Coulee Power Office
NPDES Permit # WA-002416-3

Physical Address:
Grand Coulee Dam
Highway 155 Industrial Area
Grand Coulee Dam, Washington, 99133

Mailing Address:
Grand Coulee Power Office
P.O. Box 620
Grand Coulee, WA 99133

Contact:
David Murillo
Grand Coulee Dam Power Manager
(509) 633-9501

II. Facility Information

The Grand Coulee Dam (GCD) is a large concrete dam located on the Columbia River Gorge, 90 miles west of Spokane, in Washington State. The original construction of the GCD was from 1933 to 1942. The dam has a crest length of 5,223 feet, a base width of 500 feet, a structural height of 550 feet, and required approximately 12 million cubic yards of concrete to construct. The GCD is operated by the U.S. Bureau of Reclamation, an agency of the United States Department of Interior; the dam serves the purposes of generating hydroelectric power, for irrigation, and for flood control.

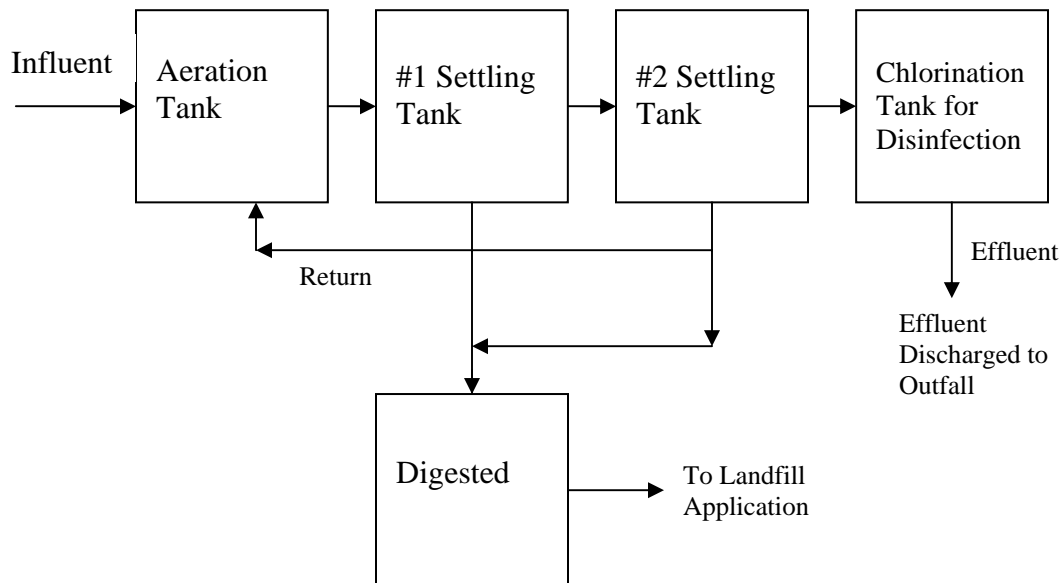
This Fact Sheet is the basis for the reissuance of a NPDES Permit for the waste water treatment plant that services a portion of the GCD. The GCD utilizes two separate sanitary sewer systems. On the west side of GCD, the sanitary wastes are discharges to a local Publicly Owned Treatment Works (POTW) at the Town of Coulee Dam. On the East side of GCD, sanitary wastes are treated in the Waste Water Treatment Plant (WWTP) that requires this NPDES Permit. The sanitary wastes from the WWTP are generated at the Right Power House and the Third Power House of the GCD. All the wastes processed at the subject WWTP is sanitary waste, and contains no industrial waste waters.

This WWTP has a design flow rate of 0.018 million gallons per day (mgd), and services a population of approximately 350 employees and for visitors at and around the Right and

Third Power Houses. The reported maximum daily flow rate in the last two years ending October 2005, was 0.0056 mgd; this is approximately 31% of the design flow rate of the WWTP. The WWTP has one outfall that discharges from the dam into the Columbia River.

The process of this WWTP is illustrated in Figure 1 below:

Figure 1: Process Flow Diagram of WWTP at Grand Coulee Dam



Land application of treated waste water is conducted by a contractor at the volume and frequency of approximately 3000 gallons, once every two years. This land application is conducted by Short Septic Services, Inc., whose business address is: 3350 Williams Road East, Almira, WA 99103. The location of the land treatment is at a site located approximately 5.5 miles NE of the town of Almira, Washington. The GCD's WWTP does not discharge or transport treated or untreated wastewater to another treatment works. In addition, the GCD WWTP does not discharge or dispose of its wastewater by underground percolation or by well injection. The WWTP utilizes secondary treatment with activated sludge and chlorination is the method of disinfection for the effluent from the outfall. The WWTP does not operate dechlorination, post aeration, nor does the outfall utilize a diffuser. The outfall is located approximately 100 feet from shore, and depending on water level managed at the dam, the outfall is submerged between 40 to 70 feet below surface. On its application dated October 4, 2005, the facility reported the

design BOD-5 removal rate of the WWTP as greater than 85% (reported at “85% to 94%”).

In the application dated October 4, 2005, the facility reported the following effluent testing information:

Table 1: Reported Concentration of Average Daily Discharge

Pollutant	Average Daily Discharge – Concentration
Biochemical Oxygen Demand, BOD-5	<2.00 mg/l
Fecal Coliform	<2.00 per 100 ml
Total Suspended Solids, TSS	<2.00 mg/l

Previous NPDES Permit for this facility was issued by U.S. EPA on January 10, 1975, and had expired on September 30, 1979. A subsequent modification to that permit was issued by U.S. EPA on November 16, 1977, however the expiration remained unchanged on September 30, 1979. Table 2 below summarizes the effluent limitations and monitoring requirements of the modified permit dated November 16, 1977:

Table 2: Summary of Previously Permitted Effluent Limitations

a) The monthly average quantity of effluent discharged from the wastewater treatment facility shall not exceed 68 cmd (0.18 mgd).			
b) The pH shall not be less than 6.0 nor greater than 9.0			
c) There shall be no discharge of floating solids or visible foam other than in trace amounts.			
d) The following limitations and monitoring requirements shall apply:			
<u>Effluent Characteristics</u>	<u>Unit of Measurement</u>	<u>Monthly Average</u>	<u>Weekly Average</u>
<u>Effluent Concentrations</u>			
Biochemical Oxygen Demand (5-Day)	mg/l	30	45
Suspended Solids	mg/l	30	45
Fecal Coliform Bacteria	Number/100 ml	200	400
<u>Effluent Loadings</u>			
Biochemical Oxygen Demand (5-day)	kg/day (lb/day)	2.0 (4.5)	3.0 (6.8)

Suspended Solids	kg/day (lb/day)	2.0 (4.5)	3.0 (6.8)
<u>Monitoring Requirements</u>	<u>Unit of Measurement</u>	<u>Sampling Frequency</u>	<u>Type of Sample</u>
Total Flow	cmd (mgd)	daily	recording
Biochemical Oxygen Demand (5-day)	mg/l	2/month	24-hour composite
Suspended Solids	mg/l	2/month	24-hour composite
Fecal Coliform Bacteria	Number/100 ml	weekly	grab
pH	s.u.	daily	grab
Chlorine residual	mg/l	daily	grab

The WWTP had no significant operational changes since the previous permit was issued. Based on recent information provided by the Bureau of Reclamation in their application, it is believed that the flow limitation in the previous permit had a typographic error. The permitted flow limitation should have been design flow of this WWTP, which is 0.018 mgd.

Compliance with Previous Permit

Based on a review of monthly Discharge Monitoring Reports submitted by the facility for every month from January 1999 to September 2005, there is no record of violation of permitted limits.

III. Receiving Water

This facility discharges from one outfall through one port from the Grand Coulee Dam into the Columbia River, on the North side, and near the East end of the dam. The discharge port is submerged between 40 feet to 70 feet below the surface, at approximately 100 feet from shore. The point of discharge is within the water boundary of the Colville Indian Reservation. The CCT has designated this segment of the Columbia River as a Class I surface water body.

A. Low Flow Conditions

The *Technical Support Document for Water Quality-Based Toxics Control* (hereafter referred to as the TSD) (EPA, 1991) and the State of Washington Water Quality Standards (WQS) recommend the flow conditions for use in calculating water quality-based effluent limits (WQBELs) using steady-state modeling. The TSD and the Washington State WQS state that WQBELs intended to protect aquatic life uses should be based on the lowest seven-day average flow rate expected to occur once every ten years (7Q10) for chronic criteria and the lowest one-day average flow rate expected to occur once every ten years (1Q10) for acute criteria. The flow data in Table 3 below is generated from the USGS data from July 1, 1923 to September 30, 2004, and analyzed by EPA's DFLOW program.

Table 3: Low Flows in the Columbia River from USGS			
Units	1Q10	7Q10	30B3
USGS data in cfs	24,300	30,000	30,050
In mgd	15,677	19,355	19,387

B. Water Quality Standards

Section 301(b)(1)(C) of the CWA requires the development of limitations in permits necessary to meet water quality standards by July 1, 1977. Federal regulations at 40 CFR 122.4(d) require that the conditions in NPDES permits ensure compliance with the water quality standards of all affected States. A State's water quality standards are composed of use classifications, numeric and/or narrative water quality criteria, and an anti-degradation policy. The use classification system designates the beneficial uses (such as drinking water supply, contact recreation, and aquatic life) that each water body is expected to achieve. The numeric and/or narrative water quality criteria are the criteria deemed necessary by the State to support the beneficial use classification of each water body. The anti-degradation policy represents a three-tiered approach to maintain and protect various levels of water quality and uses.

In 40 C.F.R. Part 131.35, EPA promulgated federal water quality standards for the Colville Tribes that were derived, in part, from standards that had been adopted by the CCT. Water quality standards have been enacted into tribal law by the CCT Business Council, as the Colville Water Quality Standards Act, CTC Title 33 (Resolution No. 1984-526 (August 6, 1984) as amended by Resolution No. 1985-20 (January 18, 1985).

It is the purpose of these Federal water quality standards is to prescribe minimum water quality requirements for the surface waters located with the exterior boundaries of the Colville Tribes to ensure compliance with section 303(c) of the Clean Water Act. The Colville Tribes have a primary interest in the protection, control, conservation and utilization of the water resources of its reservation. In 40 C.F.R. Part 131.35(b), the territory to be covered by the provisions of these water quality standards is for application to all surface waters within the exterior boundaries of the Colville Tribes. 40 C.F.R. Part 131.35(c)(1) states that: *"The water quality standards in this section shall be used by the Regional Administrator for establishing any water quality based National Pollutant Discharge Elimination System Permit (NPDES) for point sources on the Colville Confederated Tribes Reservation."*

On March 16, 2006, EPA began consultation with the CCT. EPA and the CCT believe that the point of discharge at the outfall is located within reservation water boundaries. The CCT has indicated to EPA that the point of discharge is located within a surface water that is designated as a Class I surface water body.

IV. Effluent Limitations**A. Basis for Effluent Limitations**

In general, the CWA requires that the effluent limits for a particular pollutant be the more stringent of either technology-based limits or water quality-based limits. Technology-based limits are set according to the level of treatment that is achievable using available technology. A water quality-based effluent limit is designed to ensure that the water quality standards applicable to a water body are being met and may be more stringent than technology-based effluent limits. The basis for the effluent limits proposed in the draft permit is provided in Appendix C.

B. Proposed Effluent Limitations

Below are the proposed effluent limits that are in the draft permit.

1. Removal Requirements for BOD₅ and TSS: The monthly average effluent concentration must not exceed 15 percent of the monthly average influent concentration. Percent removal of BOD₅ and TSS must be reported on the Discharge Monitoring Reports (DMRs). For each parameter, the monthly average percent removal must be calculated from the arithmetic mean of the influent values and the arithmetic mean of the effluent values for that month. Influent and effluent samples must be taken over approximately the same time period.

2. pH: pH shall be within the range of 6.5 to 8.5. This range is based on criteria for Class I surface water designation, at 40 CFR 131.35.

Table 2 (below) presents the proposed average monthly, average weekly, and maximum daily effluent limits.

Table 2: Proposed Effluent Limits			
Parameter	Units	Effluent Limits	
		Average Monthly Limit	Average Weekly Limit
Flow	mgd	0.018	---
Five-Day Biochemical Oxygen Demand (BOD₅)	mg/L	30	45
	lb/day	4.5	6.8
	% removal	85% (min)	—
Total Suspended Solids (TSS)	mg/L	30	45
	lb/day	4.5	6.8
	% removal	85% (min)	—
Fecal Coliform¹	#/100 ml	200	400
Total Residual Chlorine	mg/L	0.5	0.75
	lb/day	0.08	0.11
1. For Fecal Coliform bacteria, the limits are calculated as the geometric mean of the collected samples approximately equally spaced over a thirty day period.			

V. Monitoring Requirements

A. Basis for Effluent and Surface Water Monitoring

Section 308 of the CWA and federal regulation 40 CFR 122.44(i) require monitoring in permits to determine compliance with effluent limitations. Monitoring may also be required to gather effluent and surface water data to determine if additional effluent limitations are required and/or to monitor effluent impacts on receiving water quality.

The permittee is responsible for conducting the monitoring and for reporting results on Discharge Monitoring Reports (DMRs) or on the application for renewal, as appropriate, to the U.S. Environmental Protection Agency (EPA).

Whole Effluent Toxicity

The Water Quality Standards for Surface Waters require that the effluent not cause toxic effects in the receiving waters. Many toxic pollutants cannot be detected by commonly available detection methods. However, toxicity can be measured directly by exposing living organisms to the wastewater in laboratory tests and measuring the response of the organisms. Toxicity tests measure the aggregate toxicity of the whole effluent, and therefore this approach is called whole effluent toxicity (WET) testing.

Toxicity caused by unidentified pollutants is not expected in the effluent from this discharge. Toxicants known to be present (chlorine and ammonia) are limited or at levels low enough to not harm aquatic life. No commercial or industrial facilities discharge to this WWTP, so no toxic pollutants of unknown synergistic qualities should be introduced into the waste stream in compliance with previous permit limits. Based on all these circumstances, and the facility's size, EPA does not believe that toxicity testing is necessary for this facility. If this was a facility permitted by Washington State standards, EPA also believes that toxicity testing would not be required since it does not meet the criteria stated in Chapter 173-205-040 WAC that requires WET testing. Therefore, no whole effluent toxicity testing is required in this permit. The EPA may require effluent toxicity testing in the future if it receives information that toxicity may be present in this effluent.

Human Health

Washington's water quality standards now include 91 numeric health-based criteria that must be considered in NPDES permits. These criteria were promulgated for the state by the U.S. EPA in its National Toxics Rule (Federal Register, Volume 57, No. 246, Tuesday, December 22, 1992).

Based on the previous NPDES permit, EPA believes that the applicant's discharge does not contain chemicals of concern based on existing data or knowledge.

Sediment Quality

The Washington State Department of Ecology had promulgated aquatic sediment standards (Chapter 173-204 WAC) to protect aquatic biota and human health. The EPA

may require Permittees to evaluate the potential for the discharge to cause a violation of applicable standards to assure compliance with State and Tribal water quality standards.

EPA has determined through a review of the discharger characteristics and effluent characteristics that this discharge has no reasonable potential to violate the Sediment Management Standards. No industrial dischargers are or will discharge to the WWTP. Secondary treatment removes settleable solids. Since there are no industrial sources, heavy metals should not be present in the sludge. These factors lead to the conclusion that sediment testing near the outfall is not justified.

B. Effluent Monitoring

Monitoring frequencies are based on the nature and effect of the pollutant, as well as a determination of the minimum sampling necessary to adequately monitor the facility's performance. Permittees have the option of taking more frequent samples than are required under the permit. These samples can be used for averaging if they are conducted using EPA-approved test methods (generally found in 40 CFR 136) and if the Method Detection Limits are less than the effluent limits.

Table 3, below describes the proposed effluent monitoring requirements for the Bureau of Reclamation. The sampling location must be after the last treatment unit and prior to discharge to the receiving water. The monitoring samples must not be influenced by combination with other effluent. If no discharge occurs during the reporting period, "no discharge" shall be reported on the DMR.

Table 3: Effluent Monitoring Requirements				
Parameter	Units	Sample Location	Sample Frequency	Sample Type
Flow	mgd	Effluent	Continuous	recording
BOD₅	mg/L	Influent & Effluent	2/month	24-hour composite
	lb/day	Influent & Effluent	2/month	calculation ¹
	% Removal	--	--	calculation ²
TSS	mg/L	Influent & Effluent	2/month	24-hour composite
	lb/day	Influent & Effluent	2/month	calculation ¹
	% Removal	--	--	calculation ²
pH	standard units	Effluent	5/week	grab
Enterococci Bacteria⁴	#/100 ml	Effluent	2/year	calculation ³
Fecal Coliform	#/100 ml	Effluent	1/week	calculation ³
Total Residual Chlorine (if chlorine is used for disinfection)	µg/L	Effluent	1/week	grab
	lb/day	Effluent		calculation ¹
Ammonia as N	mg/l	Effluent	1/quarter	24-hour composite
Notes: 1. Loading is calculated by multiplying the concentration in mg/l by the flow in mgd and a conversion factor of 8.34. If the concentration is measured in µg/L, the conversion factor is 0.00834. 2. Percent removal is calculated using the following equation: (average monthly influent – average monthly effluent) ÷ average monthly influent. 3. The limits are calculated as the geometric mean of the collected samples approximately equally spaced over a thirty day period. 4. Reporting is required within 24 hours of a maximum daily limit or instantaneous maximum limit violation.				

C. Surface Water Monitoring

Surface Water monitoring is not required due the nature of the discharge from the WWTP, and the high dilution rates of the computation of the effluent discharged compared to the flow from the Grand Coulee Dam. The design flow of the WWTP is 0.018 mgd. The 7Q10 flow from the Grand Coulee Dam is 19,355 mgd. This yields a minimum dilution ratio of 1 part effluent to 1,075,279 parts river water (1 : 1,075,279). The 25% flow would yield the calculated dilution ratio of 1 part effluent to 268,820 parts river water (1 : 268,820). Based on this information that the dilution rate is very high, EPA does not expect that surface water will be impacted by the small volume of effluent from this WWTP. Therefore, EPA will not require surface water testing for dissolved oxygen, temperature, ammonia and chlorine because those effects originating from this WWTP is expected to be exceedingly small. In addition, the WWTP does not discharge wastes from industrial sources, therefore as there will not be significant loadings of metals from this WWTP, surface water testing for metals is also not required.

VI. Sludge (Biosolids) Requirements

EPA Region 10 separates wastewater and sludge permitting. EPA has authority under the CWA to issue separate sludge-only permits for the purposes of regulating biosolids. EPA may issue a sludge-only permit to each facility at a later date, as appropriate.

Until future issuance of a sludge-only permit, sludge management and disposal activities at each facility continue to be subject to the national sewage sludge standards at 40 CFR Part 503 and any requirements of the State's biosolids program. The Part 503 regulations are self-implementing, which means that facilities must comply with them whether or not a permit has been issued.

VII. Other Permit Conditions**A. Quality Assurance Plan**

The federal regulation at 40 CFR 122.41(e) requires the permittee to develop procedures to ensure that the monitoring data submitted is accurate and to explain data anomalies if they occur. The Bureau of Reclamation is required to update the Quality Assurance Plan for this waste water treatment plant facility within 90 days of the effective date of the final permit. The Quality Assurance Plan shall consist of standard operating procedures the permittee must follow for collecting, handling, storing and shipping samples, laboratory analysis, and data reporting.

B. Operation and Maintenance Plan

The permit requires the Bureau of Reclamation to properly operate and maintain all facilities and systems of treatment and control. Proper operation and maintenance is essential to meeting discharge limits, monitoring requirements, and all other permit requirements at all times. The Bureau of Reclamation is required to develop and implement an operation and maintenance plan for their facility within 90 days of the effective date of the final permit. The plan shall be retained on site and made available to EPA and ADEC upon request.

C. Design Criteria

The permit retains the design criteria requirements from the previous permit. This provision requires the Bureau of Reclamation to compare influent flow and loading to the facility's design flow and loading and prepare a facility plan for maintaining compliance with NPDES permit effluent limits when the annual average flow or loading exceeds 85% of the design criteria values for three consecutive months.

D. Pretreatment Requirements

The Bureau of Reclamation waste water treatment plant does not process any waste water generated from industrial sources. As such, EPA does not believe it is necessary for the Bureau of Reclamation to develop a pretreatment program for EPA's approval.

E. Standard Permit Provisions

Sections II, III, and IV of the draft permit contain standard regulatory language that must be included in all NPDES permits. Because these requirements are based directly on NPDES regulations, they cannot be challenged in the context of an NPDES permit action. The standard regulatory language covers requirements such as monitoring, recording, and reporting requirements, compliance responsibilities, and other general requirements.

VIII. Other Legal Requirements**A. Endangered Species Act**

The Endangered Species Act requires federal agencies to consult with National Oceanic and Atmospheric Administration Fisheries (NOAA Fisheries) and the U.S. Fish and Wildlife Service (USFWS) if their actions could beneficially or adversely affect any threatened or endangered species. On January 25, 2006, EPA wrote to NOAA Fisheries and the USFWS to obtain list of species that are endangered or threatened at the vicinity of discharge. On February 3, 2006, NOAA Fisheries replied via e-mail to EPA that there were no listed endangered species or critical habitat in the vicinity of Grand Coulee Dam. Therefore, EPA has determined that issuance of this permit will not affect any threatened or endangered species in the vicinity of the discharge.

B. Essential Fish Habitat

Essential fish habitat (EFH) includes the waters and substrate (sediments, etc.) necessary for fish to spawn, breed, feed, or grow to maturity. The Magnuson-Stevens Fishery Conservation and Management Act (January 21, 1999) requires EPA to consult with NOAA Fisheries when a proposed discharge has the potential to adversely affect (reduce quality and/or quantity of) EFH. The EFH regulations define an adverse effect as any impact which reduces quality and/or quantity of EFH and may include direct (e.g. contamination or physical disruption), indirect (e.g. loss of prey, reduction in species' fecundity), site specific, or habitat-wide impacts, including individual, cumulative, or

synergistic consequences of actions. In an e-mail on February 3, 2006, NOAA Fisheries determined that there is no Critical Habitat in the vicinity of Grand Coulee Dam.

Therefore, EPA has determined that issuance of this permit is not likely to adversely affect EFH in the vicinity of the discharge. EPA has provided NOAA Fisheries with copies of the draft permit and fact sheet during the public notice period. Any comments received from NOAA Fisheries regarding EFH will be considered prior to reissuance of this permit.

C. State Certification

The state in which the discharge originates is typically responsible for issuing the certification pursuant to CWA Section 401(a)(1). In the case where the state has no authority to give 401 certification, such as for a discharge located within the boundaries of an Indian Reservation, EPA provides the certification. The point of discharge of the outfall is also located within boundaries of the Colville Indian Reservation. Indian Tribes may issue 401 certification for discharges within their boundaries if the Tribe has been approved by the EPA pursuant to CWA Section 518(e) and 40 CFR Section 131.8 to administer a water quality standards program. The Colville Tribes has not yet been authorized to provide 401 certification; therefore, EPA is responsible for issuing 401 certification in this case. However, in the course of issuing this NPDES Permit, EPA has consulted with the Colville Tribes.

D. Permit Expiration

The permit will expire five years from the effective date.

IX. References

EPA. 1991. *Technical Support Document for Water Quality-based Toxics Control*. US Environmental Protection Agency, Office of Water, EPA/505/2-90-001.

Appendix A: Facility Information

General Information

NPDES ID Number: WA-002416-3

Physical Address: Highway 155 Industrial Area
Grand Coulee Dam, WA 99133

Mailing Address: Grand Coulee Power Office
P.O. Box 620
Grand Coulee, WA 99133

Facility Background: Waste Water Treatment Plant located on the East end of the Grand Coulee Dam

Facility Information

Type of Facility: Waste Water Treatment Plant for Sanitary Wastes

Treatment Train: Secondary Treatment; activated sludge

Flow: Designed flow rate: 0.018 mgd

Outfall Location: latitude 47° 57' 37.5" N; longitude 118° 58' 23.1" W

Receiving Water Information

Receiving Water: Down-Stream on the North side of the Grand Coulee Dam on the Columbia River

Watershed: Columbia River Watershed

Beneficial Uses: Various, including: commercial, transportation and recreational uses.

Appendix C: Basis for Effluent Limits

The following discussion explains in more detail the statutory and regulatory basis for the technology and water quality-based effluent limits in the draft permit. Part A discusses technology-based effluent limits, Part B discusses water quality-based effluent limits in general, and Part C discusses facility specific water quality-based effluent limits.

A. Technology-Based Effluent Limits

Federal Secondary Treatment Effluent Limits

The CWA requires POTWs to meet requirements based on available wastewater treatment technology. Section 301 of the CWA established a required performance level, referred to as “secondary treatment,” which all POTWs were required to meet by July 1, 1977. EPA has developed and promulgated “secondary treatment” effluent limitations, which are found in 40 CFR 133.102. These technology-based effluent limits apply to all municipal wastewater treatment plants and identify the minimum level of effluent quality attainable by application of secondary treatment in terms of BOD₅, TSS, and pH. The federally promulgated secondary treatment effluent limits are listed in Table C-1.

Table C-1: Secondary Treatment Effluent Limits (40 CFR 133.102)			
Parameter	Average Monthly Limit	Average Weekly Limit	Range
BOD ₅	30 mg/L	45 mg/L	---
TSS	30 mg/L	45 mg/L	---
Removal Rates for BOD ₅ and TSS	85% (minimum)	---	---
pH	---	---	6.0 – 9.0 s.u.

Chlorine

Chlorine is often used to disinfect municipal wastewater prior to discharge. The Bureau of Reclamation WWTP uses chlorine disinfection.

A 0.5 mg/l average monthly limit for chlorine is derived from standard operating practices. The Water Pollution Control Federation’s *Chlorination of Wastewater* (1976) states that a properly designed and maintained wastewater treatment plant can achieve adequate disinfection if a 0.5 mg/l chlorine residual is maintained after 15 minutes of contact time. Therefore, a wastewater treatment plant that provides adequate chlorine contact time can meet a 0.5 mg/l total residual chlorine limit on a monthly average basis. In addition to average monthly limits (AMLs), NPDES regulations require effluent limits for POTWs to be expressed as average weekly limits (AWLs) unless impracticable. The AWL is calculated to be 1.5 times the AML, consistent with the “secondary treatment” limits for BOD₅ and TSS. This results in an AWL for chlorine of 0.75 mg/L.

EPA has determined that these effluent limits are sufficiently stringent to meet water quality standards from July through October. For the balance of the year, more-stringent water quality-based limits apply.

Mass-Based Limits

The federal regulation at 40 CFR 122.45(f) requires that effluent limits be expressed in terms of mass, if possible. The regulation at 40 CFR 122.45(b) requires that effluent limitations for POTWs be calculated based on the design flow of the facility. The mass based limits are expressed in pounds per day and are calculated as follows:

$$\text{Mass based limit (lb/day)} = \text{concentration limit (mg/L)} \times \text{design flow (mgd)} \times 8.34^1$$

Using the formula above, the following mass-based limits are calculated for this WWTP:

$$\text{BOD5 and TSS Average Monthly Limit} = 30 \text{ mg/l} \times 0.018 \text{ mgd} \times 8.34 = 4.5 \text{ lbs/day}$$

$$\text{BOD5 and TSS Average Weekly Limit} = 45 \text{ mg/l} \times 0.018 \text{ mgd} \times 8.34 = 6.8 \text{ lbs/day}$$

$$\text{Chlorine Average Monthly Limit} = 0.5 \text{ mg/l} \times 0.018 \text{ mgd} \times 8.34 = 0.08 \text{ lbs/day}$$

$$\text{Chlorine Average Weekly Limit} = 0.75 \text{ mg/l} \times 0.018 \text{ mgd} \times 8.34 = 0.11 \text{ lbs/day}$$

B. Water Quality-based Effluent Limits***Fecal Coliform Bacteria***

Fecal Coliform effluent limits had been implemented in the previous permit. Pertaining to EPA's anti-backsliding policy and for the protection of downstream users, the same Fecal Coliform effluent limits are retained in this permit. The proposed Fecal Coliform effluent limits are also protective pertaining to Washington State standards.

Enterococci Bacteria

The receiving water has been designated by the CCT as a Class I surface water body. Pertaining to 40 CFR 131.35(f)(1)(ii)(A) for a Class I surface water body, the regulation states: "The geometric mean of the enterococci bacteria densities in samples taken over a 30 day period shall not exceed 8/100 ml, nor shall any single sample exceed an enterococci density of 35 per 100 milliliters. These limits are calculated as the geometric mean of the collected samples approximately equally spaced over a thirty day period." Since there is no enterococci bacteria data generated from this WWTP, and the Fecal Coliform effluent limits are protective, especially given a large dilution factor, EPA proposes that the facility monitor enterococci bacteria levels so that this criteria can be considered for effluent limitations at the next permitting cycle.

Statutory and Regulatory Basis

Section 301(b)(1)(C) of the CWA requires the development of limitations in permits necessary to meet water quality standards by July 1, 1977. Discharges to State or Tribal waters must also comply with limitations imposed by the State or Tribe as part of its certification of NPDES permits under section 401 of the CWA. Federal regulations at 40 CFR 122.4(d) prohibit the issuance of an NPDES permit that does not ensure compliance with the water quality standards of all affected States. The NPDES regulation (40 CFR 122.44(d)(1)) implementing Section 301(b)(1)(C) of the CWA requires that permits include limits for all pollutants or parameters which are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State or Tribal water quality standard, including narrative criteria for water quality.

¹ 8.34 is a conversion factor with units (lb × L)/(mg × gallon × 10⁶)

The regulations require the permitting authority to make this evaluation using procedures which account for existing controls on point and nonpoint sources of pollution, the variability of the pollutant in the effluent, species sensitivity (for toxicity), and where appropriate, dilution in the receiving water. The limits must be stringent enough to ensure that water quality standards are met, and must be consistent with any available wasteload allocation.

Reasonable Potential Analysis

When evaluating the effluent to determine if water quality-based effluent limits are needed, based on numeric criteria, EPA projects the receiving water concentration (downstream of where the effluent enters the receiving water) for each pollutant of concern. EPA uses the concentration of the pollutant in the effluent and receiving water and, if appropriate, the dilution available from the receiving water, to project the receiving water concentration. If the projected concentration of the pollutant in the receiving water exceeds the numeric criterion for that specific chemical, then the discharge has the reasonable potential to cause or contribute to an exceedance of the applicable water quality standard, and a water quality-based effluent limit is required.

Sometimes it is appropriate to allow a small area of the receiving water to provide dilution of the effluent. These areas are called mixing zones. Mixing zone allowances will increase the mass loadings of the pollutant to the water body and will decrease treatment requirements. Mixing zones can be used only when there is adequate receiving water flow volume and when the receiving water meets the criteria necessary to protect the designated uses of the water body.

Procedure for Deriving Water Quality-based Effluent Limits

The first step in developing a water quality-based effluent limit is to develop a wasteload allocation (WLA) for the pollutant. A wasteload allocation is the concentration or loading of a pollutant that the permittee may discharge without causing or contributing to an exceedance of water quality standards in the receiving water.

In cases where a mixing zone is not authorized, either because the receiving water already exceeds the criterion, the receiving water flow is too low to provide dilution, or the State does not authorize one, the criterion becomes the WLA. Establishing the criterion as the wasteload allocation ensures that the permittee will not cause or contribute to an exceedance of the criterion. The following discussion details the specific water quality-based effluent limits in the draft permit.

Once a WLA is developed, EPA calculates effluent limits which are protective of the WLA using statistical procedures described in Appendix F.

C. Facility-Specific Water Quality-based Limits

pH

The most stringent water quality criterion for pH is for the protection of aquatic life and aquaculture water supply. The pH criteria for these uses state that the pH must be no less than 6.5 and no greater than 8.5 standard units, with a human-caused variation of less than 0.2 units. Since the pH of the effluent is similar to the pH of the receiving water, EPA does not expect the effluent to substantially change the pH of the Columbia River. Mixing zones are generally not

granted for pH, therefore the most stringent water quality criterion must be met before the effluent is discharged to the receiving water. The draft permit requires that the effluent have a pH of no less than 6.5 and no greater than 8.5 standard units. These standards are consistent for a Class I surface water body found in 40 CFR 131.35.

Ammonia

Based on typical values from a WWTP with secondary treatment, a reasonable potential calculation showed that the Bureau of Reclamation WWTP discharge would not have the reasonable potential to cause or contribute to a violation of the water quality criteria for ammonia. Therefore, the draft permit does not contain a water quality-based effluent limit for ammonia. However, EPA proposes that the facility monitor for ammonia so that this criteria can be re-evaluated during the next permit cycle. The draft permit requires that the permittee monitor the receiving water for ammonia, and pH. See Appendices D and F for reasonable potential and effluent limit calculations for ammonia.

Table C-2: Water Quality Criteria for Ammonia		
	Acute Criterion¹	Chronic Criterion²
Equations:	$\frac{0.275}{1 + 10^{7.204 - \text{pH}}} + \frac{39}{1 + 10^{\text{pH} - 7.204}}$	$\left(\frac{0.0577}{1 + 10^{7.688 - \text{pH}}} + \frac{2.487}{1 + 10^{\text{pH} - 7.688}} \right) \times \text{MIN}(2.85, 1.45 \times 10^{0.028 \times (25 - T)})$
Results:		
1. No seasonal variation was assumed for pH, therefore, there is no seasonal variation in the acute criterion (which is a function of pH only).		

Appendix D: Reasonable Potential Calculations

The following describes the process EPA has used to determine if the discharge authorized in the draft permit has the reasonable potential to cause or contribute to a violation of federally approved water quality standards. EPA uses the process described in the *Technical Support Document for Water Quality-based Toxics Control* (EPA, 1991) to determine reasonable potential.

To determine if there is reasonable potential for the discharge to cause or contribute to an exceedance of water quality criteria for a given pollutant, EPA compares the maximum projected receiving water concentration to the criteria for that pollutant. If the projected receiving water concentration exceeds the criteria, there is reasonable potential, and a water quality-based effluent limit must be included in the permit. This section discusses how the maximum projected receiving water concentration is determined.

A. Mass Balance

For discharges to flowing water bodies, the maximum projected receiving water concentration is determined using the following mass balance equation:

$$C_d Q_d = C_e Q_e + C_u Q_u \quad (\text{Equation D-1})$$

where,

C_d = Receiving water concentration downstream of the effluent discharge (that is, the concentration at the edge of the mixing zone)

C_e = Maximum projected effluent concentration

C_u = 95th percentile measured receiving water upstream concentration

Q_d = Receiving water flow rate downstream of the effluent discharge = $Q_e + Q_u$

Q_e = Effluent flow rate (set equal to the design flow of the WWTP)

Q_u = Receiving water low flow rate upstream of the discharge (1Q10, 7Q10 or 30B3)

When the mass balance equation is solved for C_d , it becomes:

$$C_d = \frac{C_e Q_e + C_u Q_u}{Q_e + Q_u} \quad (\text{Equation D-2})$$

The above form of the equation is based on the assumption that the discharge is rapidly and completely mixed with the receiving stream. If the mixing zone is based on less than complete mixing with the receiving water, the equation becomes:

$$C_d = \frac{C_e Q_e + C_u (Q_u \times MZ)}{Q_e + (Q_u \times MZ)} \quad (\text{Equation D-3})$$

Where MZ is the fraction of the receiving water flow available for dilution. In this case, the mixing zone is based on complete mixing of the effluent and the receiving water, and MZ is equal to unity (1). Therefore, in this case, Equation D-3 is equal to Equation D-2.

If a mixing zone is not allowed, dilution is not considered when projecting the receiving water concentration and,

$$C_d = C_e \quad (\text{Equation D-4})$$

Equation D-2 can be simplified by introducing a “dilution factor,”

$$D = \frac{Q_e + Q_u}{Q_e} \quad (\text{Equation D-5A})$$

Assuming 25% flow in mixing zone, which yields a more conservative dilution factor:

$$D = \frac{Q_e + (0.25)Q_u}{Q_e} \quad (\text{Equation D-5B})$$

For the dilution factor D, the 1Q10 flow rate in the receiving stream and used to determine reasonable potential and wasteload allocations for acute aquatic life criteria; the 7Q10 flow rate to determine reasonable potential and wasteload allocations chronic aquatic life criteria (except for ammonia) and conventional pollutants, and the 30B3 flow rate to determine reasonable potential and wasteload allocations for the chronic ammonia criterion. All dilution factors are calculated with the effluent flow rate set equal to the design flow of 0.018 mgd. This results in a total of three different dilution factors under consideration for 25% flow. The dilution factors are listed in Table D-1, below.

Table D-1: Dilution Factors			
	Acute Dilution Factor	Chronic Dilution Factor	Chronic Ammonia Criterion Dilution Factor
100% flow	870,945 : 1	1,075,278 : 1	1,077,056 : 1
25% flow	217,737 : 1	268,820 : 1	269,264 : 1

After the dilution factor simplification, Equation D-2 becomes:

$$C_d = \frac{C_e - C_u}{D} + C_u \quad (\text{Equation D-6})$$

If the criterion is expressed as dissolved metal, the effluent concentrations are measured in total recoverable metal and must be converted to dissolved metal as shown in Equation D-7.

$$C_d = \left[\frac{CF \times C_e - C_u}{D} \right] + C_u \quad (\text{Equation D-7})$$

Where C_e is expressed as total recoverable metal, C_u and C_d are expressed as dissolved metal, and CF is a conversion factor used to convert between dissolved and total recoverable metal.

Equations D-6 and D-7 are the forms of the mass balance equation which were used to determine reasonable potential and calculate wasteload allocations.

Based on these equations above, EPA conducted Reasonable Potential analysis for chlorine and ammonia using site-specific data where available and typically data for WWTP with secondary

treatment using activated sludge process. The Reasonable Potential analysis are shown in the tables below, and show that there is no reasonable potential for both ammonia and chlorine.

Due to extremely high dilution rates and the comparatively small amount of effluent, EPA is proposing to use the technology based effluent limits for BOD5 and TSS.

Calculation Of Ammonia Concentration and Criteria for fresh water. Based on EPA Quality Criteria for Water (EPA 400/5-86-001) and WAC 173-201A. Revised 1-5-94 (corrected total ammonia criterion). Revised 3/10/95 to calculate chronic criteria in accordance with EPA Memorandum from Heber to WQ Stds Coordinators dated July 30, 1992.

INPUT		
1. Ambient Temperature (deg C; 0<T<30)		18.9
2. Ambient pH (6.5<pH<9.0)		8.63
3. Acute TCAP (Salmonids present- 20; absent- 25)		20
4. Chronic TCAP (Salmonids present- 15; absent- 20)		15
OUTPUT		
1. Intermediate Calculations:		
Acute FT		1.08
Chronic FT		1.41
FPH		1.00
RATIO		14
pKa		9.44
Fraction Of Total Ammonia Present As Un-ionized		13.5178%
2. Un-ionized Ammonia Criteria		
Acute (1-hour) Un-ionized Ammonia Criterion (ug NH3/L)		241.0
Chronic (4-day) Un-ionized Ammonia Criterion (ug NH3/L)		42.0
3. Total Ammonia Criteria:		
Acute Total Ammonia Criterion (mg NH3+ NH4/L)		1.8
Chronic Total Ammonia Criterion (mg NH3+ NH4/L)		0.3
4. Total Ammonia Criteria expressed as Nitrogen:		
Acute Ammonia Criterion as mg N		1.5
Chronic Ammonia Criterion as N		0.26

Fact Sheet

NPDES Permit #WA-002416-3 Fact Sheet

									CALCULATIONS									
				State Water Quality Standard		Max concentration at edge of...												
	Metal Criteria Translator as decimal	Metal Criteria Translator as decimal	Ambient Concentration (metals as dissolved)	Acute	Chronic	Acute Mixing Zone	Chronic Mixing Zone	LIMIT REQ'D?	Effluent percentile value		Max effluent conc. measured (metals as total recoverable)	Coeff Variation		# of samples	Multiplier	Acute Dil'n Factor	Chronic Dil'n Factor	
Parameter	Acute	Chronic	ug/L	ug/L	ug/L	ug/L	ug/L			Pn	ug/L	CV	s	n				COMMENTS
Total Ammonia as NH3-N				1500.0000	260.0000	0.61	0.49	NO	0.99	0.010	10000.00	0.60	0.55	1	13.19	217737	268820	
Chlorine				19.0000	11.0000	0.01	0.01	NO	0.99	0.998	2900.00	0.60	0.55	2000	0.75	217737	268820	

Appendix E: Effluent Limit for pH

Water quality standards found in 40 CFR 131.35(f)(1)(ii)(E) for a Class I surface water body states that “pH shall be within the range of 6.5 and 8.5 with a human caused variation of less than 0.2 units”. Due to the extremely high dilution rates relative to effluent discharged, EPA does not expect the pH effects from this WWTP would measurable change the pH of the Columbia River. Rather than to calculate the pH at the edge of the mixing zone, EPA proposes to set the effluent limitation for pH at between 6.5 and 8.5.

Appendix F: WQBEL Calculations - Aquatic Life Criteria

Since there is no reasonable potential for contaminants of concern, for this case EPA will not be calculating Water Quality based Effluent Limits (WQBELs).

The following calculations demonstrate how the water quality-based effluent limits can be calculated if there were reasonable potential

Calculate the Wasteload Allocations (WLAs)

Wasteload allocations (WLAs) are calculated using the same mass balance equations used to calculate the concentration of the pollutant at the edge of the mixing zone in the reasonable potential analysis (Equations D-6 and D-7). To calculate the wasteload allocations, C_d is set equal to the acute or chronic criterion and the equation is solved for C_e . The calculated C_e is the acute or chronic WLA. Equation D-6 is rearranged to solve for the WLA, becoming:

$$C_e = \text{WLA} = D \times (C_d - C_u) + C_u \quad (\text{Equation F-1})$$

The Federal regulation at 40 CFR 122.45(c) requires that effluent limits be expressed as total recoverable metal. Therefore, EPA must calculate a wasteload allocation in total recoverable metal that will be protective of the dissolved criterion. This is accomplished by dividing the WLA expressed as dissolved by the criteria translator, as shown in equation F-2. As discussed in Appendix C, the criteria translator (CT) is equal to the conversion factor, because site-specific translators are not available for this discharge.

$$C_e = \text{WLA} = \frac{D \times (C_d - C_u) + C_u}{\text{CT}} \quad (\text{Equation F-2})$$

The next step is to compute the “long term average” concentrations which will be protective of the WLAs. This is done using the following equations from EPA’s *Technical Support Document for Water Quality-based Toxics Control* (TSD):

$$\text{LTA}_a = \text{WLA}_a \times \exp(0.5 \cdot z^2 - z) \quad (\text{Equation F-3})$$

$$\text{LTA}_c = \text{WLA}_c \times \exp(0.5 \cdot z^2 - z) \quad (\text{Equation F-4})$$

where,

$$z^2 = \ln(\text{CV}^2 + 1)$$

$$= \sqrt{\sigma^2}$$

$$z^2 = \ln(\text{CV}^2/4 + 1)$$

$$= \sqrt{\sigma_4^2}$$

$$z = 2.326 \text{ for } 99^{\text{th}} \text{ percentile probability basis}$$

The LTAs are then compared and the more stringent is used to develop the daily maximum and monthly average permit limits as shown below to Derive the maximum daily and average monthly effluent limits

Using the TSD equations, the MDL and AML effluent limits are calculated as follows:

$$MDL = LTA \times \exp(z_m - 0.5 n^{-2}) \quad (\text{Equation F-5})$$

$$AML = LTA \times \exp(z_a - 0.5 n^{-2}) \quad (\text{Equation F-6})$$

where σ_n^2 and n^2 are defined as they are for the LTA equations (F-2 and F-3) and,

$$n^2 = \ln(CV^2/n + 1)$$

$$= \sqrt{\sigma_n^2}$$

$z_a = 1.645$ for 95th percentile probability basis

$z_m = 2.326$ for 99th percentile probability basis

n = number of sampling events required per month (minimum of 4)

Appendix G: Essential Fish Habitat Assessment

Pursuant to the requirements for Essential Fish Habitat (EFH) assessments, this appendix contains the following information:

- Listing of EFH Species in the Facility Area
- Description of the Facility and Discharge Location
- EPA's Evaluation of Potential Effects to EFH

A. Listing of EFH Species in the Facility Area

On February 3, 2006, NOAA responded to an inquiry from EPA in which there are no listed endangered species in the area. In addition, there are no critical habitats.

B. Description of the Facility and Discharge Location

The activities and sources of wastewater at the Bureau of Reclamation waste water treatment facility are described in detail in Part II and Appendix A of this fact sheet. The location of the outfall is described in Part III ("Receiving Water").

C. EPA's Evaluation of Potential Effects to EFH

Water quality is an important component of aquatic life habitat. NPDES permits are developed to protect water quality in accordance with state water quality standards. The standards protect the beneficial uses of the waterbody, including all life stages of aquatic life. The development of permit limits for an NPDES discharger includes the basic elements of ecological risk analysis. In this site specific case, NOAA has informed EPA that there are no listed endangered species, and no critical habitat in the vicinity of discharge.

Effluent Characterization

Characterization of Bureau of Reclamation effluent was accomplished using a variety of sources, including:

- Permit application monitoring
- Permit compliance monitoring
- Statistical evaluation of effluent variability

Identification of Pollutants of Concern and Threshold Concentrations

The pollutants of concern include pollutants with aquatic life criteria in the Colville Water Quality Standards. No other pollutants of concern were identified.

Exposure and Wasteload Allocation

Analysis of the transport of pollutants near the discharge point with respect to the following:

- Mixing zone policies in Water Quality Standards
- Dilution modeling and analysis
- Exposure considerations (e.g., prevention of lethality to passing organisms)

- Consideration of multiple sources and background concentrations

Monitoring Programs

Development of monitoring requirements includes the compliance monitoring of the effluent.

Protection of Aquatic Life in NPDES Permitting

EPA's approach to aquatic life protection is outlined in detail in the *Technical Support Document for Water Quality-based Toxics Control* (EPA/505/2-90-001, March 1991). EPA and states evaluate toxicological information from a wide range of species and life stages in establishing water quality criteria for the protection of aquatic life.

The NPDES program evaluates a wide range of chemical constituents (as well as whole effluent toxicity testing results) to identify pollutants of concern with respect to the criteria values. When a facility discharges a pollutant at a level that has a "reasonable potential" to exceed, or to contribute to an exceedance of, the water quality criteria, permit limits are established to prevent exceedances of the criteria in the receiving water (outside any authorized mixing zone).

Effects Determination

Since the proposed permit has been developed to protect aquatic life species in the Columbia River in accordance with the Colville water quality standards, EPA has determined that issuance of this permit is not likely to adversely affect any EFH in the vicinity of the discharge.